REMARKS

Summary

Applicant requests entry of the proposed amendments, withdrawal of the final rejection, favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Status of the Claims

Claims 1-34 and 45 remain pending. Claims 46 and 47 are proposed to be cancelled. The independent apparatus claims 1, 17, and 45 and dependent claim 7 are proposed to be amended. Method claims 35-44 previously were cancelled, in view of the final restriction requirement and the filing of Divisional application Ser. No. 11/546,974 on October 13, 2006. Ser. No. 11/546,974 has been allowed, and the present amendments are considered to be allowable upon entry of the amendments being proposed. No new matter has been added.

Claim Rejections

Claims 1-34 and 45-47 were noted by the Examiner as being construed so as to not include any SET "features" and further that certain SET structural limitations argued by applicants still were viewed as "not recited in the rejected claims". The Examiner has not particularized exactly which claim "features" are not being given any weight.

On that basis, claims 1-16, 45 and 46 were finally rejected substantively under 35 U.S.C.§ 103(a) as being unpatentable over U.S. Patent No. 5,505,502 Smith et al. ("Smith et al '502") in view of first hypotheticals allegedly based upon a 2282 Thiokol High Performance Polysulfide Joint Sealant "properties" document ("Thiokol 2282").

Claims 17-34 and 47 in the alternative were finally rejected substantively under 35 U.S.C.§ 103(a) as being unpatentable over Smith, et a '502 in view of U.S. Patent No. 3,822,902 to Maurer et al. ("Maurer et al '902") using second hypotheticals. The Examiner has posited that the "method of forming the device is not germane" so that some non-identified "limitation is given little patentable weight".

The Examiner in the first hypotheticals again has characterized the simple Thiokol properties document as being an "enabling" secondary teaching despite the fact that only the present specification teaches that such a non-grease, general purpose sealant material has unexpected advantage, when used in the environment of a modern SET joint.

In the second hypotheticals, those limitations as to structural particulars of a first and second metallic coating not at all found in a secondary teaching of Maurer again appear to have been given no weight as being a matter of mere "selection on the basis of suitability for intended use as a matter of obvious design choice".

Response To Claim Rejections

Claims 1-34 and 45 contain structural limitations that cannot be ignored

Applicant proposes to amend independent claims 1, 7 and 45 so as to reflect novel structure, and structure that is consistent with allowed method claims in the divisional application Ser. No. 11/546,974, which presented non-elected method claims, 34-44.

Applicant proposes to amend claim 1 to emphasize that the sealant is a greaseless elastomeric sealant that is cured to an elastic modulus less than about 2.0 MPa (290 p.s.i).

Applicant proposes to amend claim 17 to emphasize that the structure comprises a female threaded element threadedly engaged with said male threaded element so as to thereby cold weld the first and second metallic coatings together, and further that the first metallic coating remains cold welded to that second metallic coating upon the assembly being radially expanded.

Applicant proposes to amend claim 45 to emphasize that the sealant is a greaseless elastomeric sealant that is applied as a paste which then is cured to be rubber-like so as to have the novel characteristics, in combination, of (i) capable of being elongated at least about 100 percent while remaining extended between and adhered to the threading of one radially expandable element and the threading of the other radially expandable element, (ii) adhered to the threading with an adhesion-to-rigid-substrate of at least 0.35 MPa (51 p.s.i.); and (iii) with an elastic modulus between about 0.5 MPa (73 p.s.i.) and about 2.0 MPa (290 p.s.i.).

In the last Amendment it was argued that, in light of the specification, the claim limitation "a radially expandable threaded tubular assembly to be radially expanded after

connection to define oilfield tubular goods" was a valid and clear limiting restriction on the nature of the assembly structure which follows, and a limitation that would be understood by workers in this field as meaning an improved joint which has been specially adapted or configured for use with modern SET (Solid Expandable Tubulars) technology.

The Examiner appears to disagree, now taking the position that the structure which enables forming a particular structural *state* of a device it not germane to the issue of patentability of the device itself. Therefore, any such limitation either can be ignored outright , or alternatively ignored using the rubric "given little patentable weight".

Yet, MPEP § 2173.05(g) instructs that there is nothing wrong with defining some part of an invention in functional terms, and that all limitations should be considered.

Likewise, MPEP § 2173.05(g) instructs that "A functional limitation must be evaluated and considered, just like any other limitation of the claim, *for what it fairly conveys to a person of ordinary skill in the pertinent art* in the context in which it is used. A functional limitation is often associated with an element, ingredient, or step of a process to *define a particular capability or purpose that is served by the recited element, ingredient or step*." (emphasis added).

In the last Amendment, Applicant had further particularized independent apparatus claims 1, 17, and 45 so as to emphasize that the essential SET nature of invention would be characterized in the preamble, as follows:

A radially expanded ~~expandable~~ threaded tubular assembly ~~to be~~ that has been radially expanded from within after a connection of male and female elements so as to define oilfield tubular goods, said assembly comprising:

and

An expandable sealed tubular joint ~~adapted to be~~ that has been radially expanded from within after connection of a pair of elements so as to define a sealed and threaded joint portion of oilfield tubular goods comprising:

In the amendment proposed for claim 1, above, Applicant now further particularizes novel structure in that SET environment, as follows:

... female threaded element being threadedly engaged with said male threaded element with a greaseless elastomeric sealant disposed between said threaded elements; ~~and~~ wherein

~~an~~ said greaseless elastomeric sealant extends ~~extending~~ between the external male threading and the internal female threading and adheres ~~adhering~~ to both the external male threading and the internal female threading, and is cured to an elastic modulus less than about 2.0 MPa (290 p.s.i) said cured greaseless elastomeric sealant ~~became~~ remaining extended and adhered

between said threaded elements while being elongated ~~after curing while remaining extended~~ between ~~and adhered to~~ the external male threading and the internal female threading upon the assembly being radially expanded from within the male threaded member in the intended use.

The SET Technology of the present invention is a distinct and definite field of invention, that was not a "mere intended use" of any type of pipe connection. Applicant incorporates by reference to facts recited in the June 13, 2006 Response, and the July 16, 2007 Preliminary Amendment, wherein both structural as well as functional differences were pointed out between the present invention and the connections disclosed in Smith et al'502, which has repeatedly been identified and characterized as a connection to be threaded on already "expanded" pipes that really would not be expanded afterwards, in contrast to current SET technology. The Examiner in an earlier interview stated that it was his view that it was not possible to limit claim structure by reference to any expansion that would be imposed upon the structure in the field, for example.

Applicant once again respectfully and categorically disagrees with the Examiner's essential premise that any SET structure cannot be claimed as an apparatus, because of invariable "method" problems. In that regard, applicant points out that both before and after this application was filed in November, 2003 certain other published patent applications, of record herein, were issued as US patents with claims that were allowed because those claims were characterized with limitations pointing categorically to a utility only as a SET type apparatus.

In the last amendment it was pointed out that DeLange et al. issued as US 6,550,812 B1 with a Claim 1 characterizing a *resulting* metal-to-metal seal based upon a disclosure solely about a made-up SET structure, and that the later-issued

Coulon et al., issued as US 6,712,401 B2 , is even more pertinent, having a claim 1 that characterized the SET structure in both a first state, upon making the connection and in a made-up or second state, after an expansion.

Independent claims 1, 17 and 45 as amended fairly convey and recite a very particular purpose, which serves to better define the structural attributes of interrelated components. These claims categorically comply with MPEP §2173.05 (g) in that there is a defining aspect of the present invention that requires functional terms, and all such limitations need to be considered. *See, e.g., K-2 Corp. v. Salomon S.A.,* 191 F.3d 1356, 1363, 52 USPQ2d 1001, 1004 (Fed. Cir. 1999) ("The functional language is, of course, an additional limitation in the claim.") *See, also,*

Intel Corp. v. U.S. International Trade Commission, [948 F2D 821] 948 F.2d 821, 832, 20 USPQ2d 1161, 1171 (Fed Cir. 1991) (interpreting functional language in an apparatus claim as requiring that an accused apparatus actually possess the *capability* of performing the recited *function*)

The finally rejected claims, and the more particular claims as proposed to be amended herein, therefore, cannot be viewed as a structurally complete invention within the claim body wherein a preamble only serves to state a purpose or one intended use for the invention, so that the preamble is not really a claim limitation. *Compare, Rowe v. Dror,* [112 F3D 473] 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed.Cir. 1997).

Claims1-34 and 45 manifestly are not obvious over Prior Art, particularly as now amended

Applicants submit that the present inventions, as recited in independent claims 1, 17, and 45, are not obvious because there has been no fair recognition of the nature of the claimed structure, and there is no true teaching reference for the particular invention being claimed.

When a SET pipe expansion process is produced inside a connection threaded on a pipe end there are several unique and challenging things to be considered.

First, from a structural perspective, it is necessary to perform this expansion as smooth as possible aiming to avoid the rupture of the string at any of the weakest points, such as the connection or the interface of a pipe and a connection. Recall that it is also important to use strings with constant or almost constant stiffness all along the length of the string. Therefore, it is necessary to provide a nearly constant profile of the string with no sudden changes in wall thicknesses, since it is well-known that changing thicknesses causes localized stresses. These localized stresses could lead to a failure in the transition area when subjected to high tensile loads like those observed during the expansion process.

Second, from a sealability point of view, it is mandatory that the connection maintain sealing integrity even after being radially expanded. The shrinking reaction tends to force both the male and the female members of the connection to be separated from each other. Hence, it is necessary to provide a way of maintaining both members together while being expanded and then

to remain together after the expansion.

The expandable connection object of the invention is a connection able to be expanded after being assembled as it is deemed necessary in accordance to the SET technology. According to this SET Technology the connection is assembled and run into the well and further expanded inside the well. In order to do this in a safely manner the stiffness of the system connection/pipe should be of the same order all along the string without abrupt changes in the wall thicknesses prior to expanding. In the oil and gas industry the connection that in the assembled condition has a wall thickness –defined as the difference between the external diameter and the internal diameter of the connection divided by two - equal to those wall thicknesses of the adjacent pipe sections is called "flush" connection or "flush" joint.

MPEP § 2144.05 very specifically requires Examiners to be on guard, and not to slip into factually unsupportable, hindsight "obviousness" reconstructions when tests or other evidence is made of record. The Examiner simply has posited that every novel, claimed structural limitation can be summarily ignored and labeled obvious over the cited teaching reference, Smith et al '502, because none of the "method" limitations need to be given any "patentable weight". Just because Applicant *suggested* Thiokol 2282 as illustrating one acceptable chemistry for a greaseless sealant does not *ipso facto* permit the Examiner to ignore the critical fact: *No One In The Prior Art Ever Taught Or Imagined That a Greaseless Sealant Might Be Useful in a SET Joint environment!*

Prior art workers thought a lubricating grease, such as a pipe dope, was needed to *Lubricate* the threads of a SET connection. That is the crux of the improper premise used by the Examiner in the final rejections. Ignoring what Smith et al '502 plainly teaches and just picking and choosing recited structural limitations from Thiokol 2282, a totally unrelated reference to anything at all discussed in Smith et al '502, is the ultimate example of hindsight reconstruction. Smith et al '502 has no mention about any material that is to be initially and tightly adhered to threaded surfaces and then is to be elongated without breaking that bond. Since Smith et al '502 has no mention about cold welding two metal layers upon a threaded engagement, what possible basis exists for "correcting" that deficiency by looking to Maurer et al '902? Again, the unique solution only found herein is to adhere or cold-weld materials together upon engagement and in

such a way that the adherence and material integrity is not lost upon an elongation after the assembly is expanded.

The joint of the invention as defined by independent Claim 1 has repeatedly been recognized and acknowledged to be novel. All the evidence now of record compels a conclusion that that this novel invention hardly can be characterized as obvious in view of alone, or in the alternative a second, hopelessly inadequate "teaching reference"

The connection described and claimed herein does not employ sliding metal-metal seals or an elastomeric O-ring seal as in the 1993 teachings of Smith et al. '502. Only applicants teach an SET type of sealing mechanism provided by an elastomeric sealant or cold welded soft metals which are suitable for expansion by a mandrel after being assembled.

Likewise, the metal coatings illustrated within the 1972, alleged "secondary teachings" of Maurer et al '902 are irrelevant because they do not address requirements of a SET joint. Maurer et al '902 disclose a heavy upset connection with a seal ring and a groove to avoid high pressure inside the connection and make reference to the use of thread lubricant (zinc base or lead base) to prevent galling (col.4, lines 10-17).

Applicants exclude use of any separate thread lubricant in between the coated surfaces as such could prevent the same from being cold-welded. Applicants have plainly taught that both members must be threaded and engaged to form a cold welding upon expansion, to create a strong connection. The cold welding process between metallic coatings taught only by the present invention is needed for joining SET expandable pipes, and a viscous lubricant would destroy that weld.

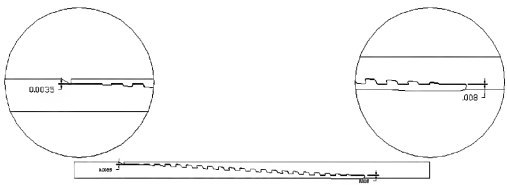
Concerning the use of a polysulfide for the present SET application as merely an obvious "design choice", Applicants again respectfully disagree with the Examiner. The material safety datasheets of this type of sealants categorically and merely teach or mention that the same are considered "flexible sealants" There is no prior art teaching of record about why or how to extrapolate from problems associated with a typical threaded connection to the very different SET connection recited as the invention. There is no doubt that Thiokol merely suggests a use of this sealant for a simple caulking.

Evidence of Record Support the Non-obviousness of the Claimed Sealants in the SET Environment Defined By The Claims

Drawbacks To Use of Claimed Sealants Well Established in the Prior Art

Applicant has made of record the fact of well known drawbacks to using a caulking compound sealant with any threaded connection, which essentially render non-obvious an application of a particular sealants for the present type of SET connection. The drawbacks made of record have not been specifically addressed by the Examiner again, and in order to render the present Response complete those drawbacks will be summarized again, as follows:

Gaps: The gaps that are left for any type of lubricant, sealant, substances in general when these threaded connections are made-up are smaller than that it is recommended by the manufacturer of these sealants. For instance, for a connection size of 5 ½" [ref drawings RD-XP-5500-17B and RD-XP-5500-17B] the gaps would be as shown below, being a maximum of 0.008 inches in the radial direction.



PICTURE 1

It is also well-known that manufacturers do not recommend these products for joints less than ¼" in width or depth [ref Technical datasheet PSI 270/RC Multicomponent Polyurethane Reservoir Sealant and/ or Syntacalk GC2+ Specification Data Sheet].

The design of the invention was optimized to allow an acceptable behavior of the sealant, while the distribution had to be optimized based on the volume to be occupied after the radial expansion from within, as the final step in modern SET make-up procedure.

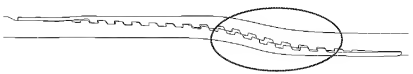
In addition the capacity of these sealants to stand the claimed loads typically also must be

tested [ref ASTM D429-02a Method A and ASTM D-412 Method A]. Such tests measure the adhesion the rigid substrates and provide data about elongation and tensile resistance. Hence, for a SET application, there are unpredictable requirements and workers do not expect any mere 'sealant" to be useful.

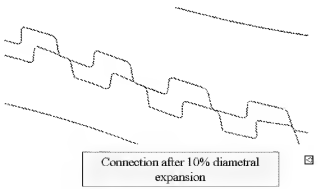
Lack of lubrication: The Examiner has posited that it must be obvious to use any manner of coatings applied on each of two mating members to avoid galling. "Galling" is of course a major concern for connections to be used in the oil and gas industry. In order to avoid an undesirable outcome after assembling the connection the use of grease-like lubricants always has been considered an imperative. Having said that, the use of any member of the class of elastomeric sealants would be taught away from. Note the specification herein points out that in the context of the present invention none of the datasheets for the elastomeric coatings described at ¶57 [page 6] claim any lubrication properties, whatsoever!.

Furthermore, in the context of the present invention it is disclosed that the elastomeric sealant critically must be "greaseless" as that characteristic is absolutely necessary for the sealant not to slip during the SET expansion process.

The following picture is a numeric simulation of what may happen when a given connection is expanded and slipping was allowed, due to the presence of lubricants.

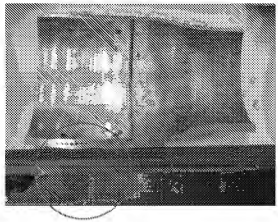


PICTURE 2



PICTURE 3

Such behavior was also observed in connections that had been assembled with thread compounds or standard thread sealants (e.g., Loctite 567) following an expansion process.



PICTURE 4

Capacity to sustain the deformation and remain adhered to the substrate: In order to validate the applicability of these sealants in the context of the present invention, it was required that the connections with any sealant be tested by performing evaluations [ref Instituto Nacional de Tecnologia Industrial – Centro de Investigación y Desarrollo Tecnológico de la Industria del Caucho (Buenos Aires, Argentina)]. Hence, workers of ordinary skill would make no "assumptions" about the utility of any particular sealant, and instead would expect to test and analyze the obtained results that then would have to be corroborated, when the SET connections are expanded.

Testing By Applicant Supported the Non-obviousness of the Claimed Sealant

In a SET environment, there is no factual basis for the Examiner's position that it would have been obvious for someone with the appropriate skills "to modify Smith et al based on Maurer et al to provide a first and second coating to ensure that the threads are thoroughly lubricated to protect against galling".

The Examiner's position arguably might be supportable if a worker in oilfield tubular joints wanted to just connect together simple threaded connections. However, any typical coating

used with a standard application does not at all predict or imply suitability for an expandable SET connection. In the context of the present invention, the coatings -- either metallic or elastomeric -- must be carefully evaluated and tested in order to stand the level of deformation the SET connection is subjected to.

Where a metallic coating has been used in previous applications for joining pipes, in all of those previous applications there also has been a lubricant to allow a proper assembly without damaging the connection or causing galling. In the context of the present invention, both coatings are assembled with no need of lubricants, essentially because any lubricant would act as an interface between the mating coatings and completely prevent the required cold welding. If this is the case the connection could be assembled, but with a minor expansion the male thread, the female thread or both could slip one against the other provoking the opening of the connection with a possible disassembly leading to a connection not suitable for the application, as leak paths could appear as shown above, in Pictures 2, 3 & 4.

Therefore, it is critical to appreciate that, in the context of the present invention, when the coatings are applied as specified a "cold weld" takes place between the mating members of the connection. This assures a successful assembly, and keeps the member of the connection together before, during and after the expansion making it suitable for use as an oil field tubular good, that is to say allowing fluids (oil, gas, condensed gas) to circulate internally of the string of pipes and connections. For such a cold welding the thicknesses of the coatings is optimized so that there is enough strength in the layer and in the interfaces, and additionally it should not be so thick so as to cause restrictions during the make-up.

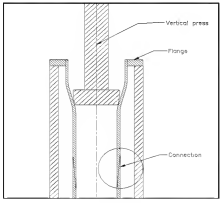
The metals specified and claimed herein have certain characteristics to allow the cold welding process to happen. Not any metal will undergo a shear stress without propagating fissures or cracks. The shear stress is produced while the expansion is taking place and the threads of the pin (male) and box (female) tend to separate from each other. This feature is also helped by the low recrystallization temperature that the specified and claimed metals have, which allows them remain strain free after the expansion.

Therefore, it also is critical to appreciate that, merely selecting any metallic coatings for a SET connection to join pipes will not make accomplish the intended result - a connection both

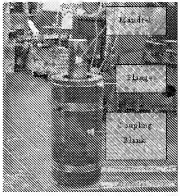
suitable to be expanded and able to remain fully fluid tight and operative after that SET expansion. The only way of guaranteeing an acceptable metal seal performance is by producing a "cold weld" which is essential for the application.

The Polyspec, Thiokol 2282 material was discovered to have acceptable characteristics for the particular SET threads of the invention, such as a minimum shear stress, only after testing done by applicants. Applicants submit that the geometry and mechanical characteristics required by claims 45, 46 are not merely data recited in the brochure being relied upon by the Examiner, and the difficulties of a SET sealing environment are also not addressed in that document.

In the case of the elastomeric sealants the same situation occurs but in this case the elastomeric sealants should resist both the expansion and they should remain attached to the substrate they were applied on. In this case different types of tests were conducted including, but not restricted to [ref ASTM D429-02a Method A] to corroborate that even with thicknesses and gaps smaller than those recommended by the manufacturers these elastomers could provide an acceptable response. Adaptability of any particular elastomer for the present invention had to be corroborated by completing a series of expansions in-house. During these expansions the connections and pipes were expanded 7% and 14% using a device for small samples which are shown schematically and its actual shape, by the pictures below (Pictures 5 & 6).



PICTURE 5

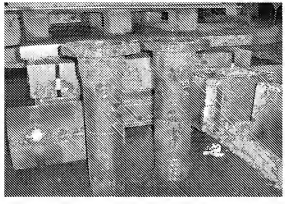


PICTURE 6

Right after these expansions the connections remain joined, i.e. assembled without showing any gaps in the threads. A picture of connections in non-expanded and expanded

condition can be seen in the picture below (Picture 7)

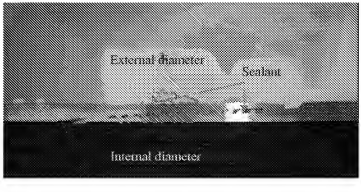
PICTURE 7 – Right: expanded connection.



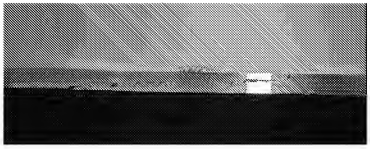
These connections were manufactured with an original external diameter of 5 ½" and tested for tightness [ref Center for Industrial Research –CINI] using water and gas following the steps:

Water (psi): 0, 3000, 3500, 4000, 4500, 5000, 5500 and 6000.
Nitrogen (psi): 0, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500 and 6000
Holding times were 10-minute long, except for the first and last steps which lasted 15minutes and 25 minutes respectively.

After completing the test the connections were cut in slices so as to check the condition of the threads. Two examples of these connections can be seen in Pictures 8 and 9 below.



PICTURE 8



PICTURE 9

Note that some waves on the external diameter are produced during the SET expansion process. What it is clear in both cases is that the connection remained closed after the expansion which is completely different from what has been seen in Pictures 3 and 4.

Structural Differences between the Joint as Claimed and the Prior Art

Smith et al '502 is not a true teaching reference for the invention of Independent Claim 17, which comprises a radially expandable male threaded element having external male threading and a first free end. The external male threading includes a first incomplete thread and a first hooked thread. The first incomplete thread is located at least adjacent the first free end of the male threaded element. The assembly also comprises a radially expandable female threaded element having internal female threading and a second free end. The internal female threading includes a second incomplete thread and a second hooked thread. The second incomplete thread is located at least adjacent the second free end of the female threaded element. The assembly also comprises a first metallic coating disposed on and adhered to the external male threading, and a second metallic coating disposed on and adhered to the internal female threading. The female threaded element is threadedly engaged with the male threaded element, and the first metallic coating is cold welded to the second metallic coating

There are various other structural differences between the specified and claimed invention, and the cited prior art. In particular, Smith et al '502 make use of a connector which walls are thicker than those of the pipe sections to which the pin and box parts are connected, for example, as by welding. Hence, Smith et al '502 in fact are teaching the different structure of something "expanded"; i.e. a connector threaded on a pipe with thicker wall, and not anything that is intended to be "expandable"; i.e. with a capacity of being expanded.

Smith et al '502 illustrate thin-walled extensions or lips 31, and 35 [col 4, lines 8-30] and an o-ring 38 that can be wedged and compressed up to 25%. However, these structures very plainly are taught to be the result of a make-up torque that creates a camming seal and not an inner, radial expansion arising from use of a separate inner SET mandrel or the like tool. Note also that even mere inner fluid pressure is said to be able to flex the lip 31, outward. [col 5 lines 13-26].

Applicants specifically disclosed in the present application, at ¶55, that the chemistry illustrated by the Thiokol 2282 brand was one example of a preferred class of greaseless sealants, useful according to principles of the present invention. However, nothing within the four corners of the specification of Thiokol 2282 suggests that it would have utility according to the particularly claimed SET geometry that is defined by the claims. Only a complete hindsight reconstruction using applicant's specification as the true teaching reference is available to make that leap.

Maurer et al '902 is a 1972 patent that has nothing to do with SET technology and therefore categorically is irrelevant and cannot be relied upon as a secondary reference that would teach one of ordinary skill about some "obvious" modification to the 1993, alleged teaching reference of Smith et al '502, in order to produce the particular and novel SET improvements being claimed.

Independent Claims 1, 17 and 45 Define Joint Structure Not in the Prior Art

The above facts and structural evidence were, for a second time, detailed in the most recent, March 10, 2008 Amendment.

Workers or ordinary skill as of November, 2003, when the present application was filed, also will correctly understand the present claims as an apparatus configured for being cold-worked, in order to create a steel pipe resulting in a pipe with a larger diameter. The recited structure also recognizes the need to react to such deformation which creates a shrinking or "spring-back" effect towards the inside diameter of the pipe. This effect exists all along the pipe but it is particularly severe on the free ends of the pipe as there is nothing there to restrain such a movement.

Smith et al '502 merely describes a connector (box and pin) joined to pipes, for instance by welding them, where the walls of such connector are thicker than the pipes that such pins and boxes are connected to. Smith et al '502 illustrates connectors which have two metal seals as well as an elastomeric seal with two thread load relief grooves, formed by two mating threaded surfaces, one with a male (pin) thread and the other with a female (box) thread. The metal seals are located on long, unthreaded lips while the elastomeric seal is located in a groove close to the external shoulder of the male member.

Smith et al '502 do not disclose any incomplete threads adjacent a free end, but instead an elongated extension or lip, 31, 35. Applicants have taught criticality for an overall constant diameter joint and pipe and a first incomplete thread being located at least adjacent the first free end of a male threaded element. The present application further discloses incomplete threads with a very particular geometry or shape, i.e. trimmed roots but complete crests which are critical to provide a longer contact along the threaded area and which increases the tensile resistance of the connection in comparison with the prior art.

With respect to the "obviousness" of choosing any particular "sealant", as recited in Claim 45 and 46, it again is emphasized that the alleged *teaching reference*, Smith et al '502, does not disclose any type of thread sealant at all, just three mechanical seals, including sliding metal-metal contacts and a compressed O-ring. The larger diameter and very long tong surfaces 50, 51 are noted to be spaced from a "corrosion protection coating" on the pipe surfaces 22, 23 but no manner of thread sealant is mentioned. Perhaps, a lubricant would be used during the assemblage, but the two metal seals and the O-ring are taught to be required to provide the sealing mechanism. Additionally, a standard viscous, API thread dope would not be suitable for SET type expandable connections as it cannot stand the forces which result from the expansion process.

Smith et al. '502 represents an approach taken by Royal Dutch Shell, in 1993. Later disclosures by Shell that are more specific to modern SET techniques include US Pat. No. 6,604,763 B1, which likewise illustrates that Shell has taught away from any manner of a greaseless polymer or flowable sealant, in favor of solid rubber O-rings that deform elastically upon an expansion.

Another basic fact makes the 1993 vintage connection disclosed by Smith et al. '502 not

comparable to the one described herein. Smith et al. '502 is a connection threaded on heavy wall pipes which would present great difficulty for expansion due to the inhomogeneous distribution of wall thicknesses. Such pipe and connection geometry not only may lead to a fracture in the transition zone between the connector and the pipe, but also does not provide an appropriate solution for the drilling/completion problems that are identified herein.

Likewise, despite the allegations of the Examiner, Smith et al '502 is not a true teaching reference for the invention of Independent Claim 45, which comprises an expandable sealed tubular joint with a pair of radially expandable elements each having threading at a free end thereof and coupled to one another. The threading includes hooked incomplete threads located at least adjacent the free ends. The joint also comprises a sealing substance extending between and adhering to the threading of one radially expandable element and the threading of the other radially expandable element. After a radial expansion of the coupled pair of radially expandable elements, the sealing substance remains extended between and adhered to the threading of one radially expandable element and the threading of the other radially expandable element.

Dependent Claims Add Limitations Defining Joint Structure Not in the Prior Art

Dependent claims 2-16, and 18-34 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. For example, neither Smith et al '502 nor Maurer et al '902 discloses a flush joint connection, as recited, for example, in dependent claims 11, 29, and 47.

The dependent claims 2-10, 18-34 are not obvious or the product of some routine optimizations. Applicants respectfully disagree with the unsupported contentions that Smith et al '502 or the Thiokol document or Maurer '902 can be read to teach the various and particular limitations as found in the dependent claims. As discussed above, neither Smith et al '502 nor Maurer et al '902 teach the SET environments defined in all of the dependent claims. This issue should moot in view of the discussion above regarding independent claims 1, 17, and 45.

Further individual consideration of these dependent claims is requested.

Conclusion

Applicants respectfully submit claims 1-34 and 45 of the instant application are in condition for allowance. Favorable reconsideration, withdrawal of the final rejections set forth in the above-noted Final Office Action, and an early Notice of Allowance are requested.

The undersigned attorney may be reached in our Washington, DC office by telephone at (202) 530-1010.

The fee for a Response in the Third Month is being paid electronically. Any additional fee required to render a response timely may be charged to our Deposit Act. No. 06-1205.

All correspondence should continue to be directed to our address given below.

Respectfully submitted

/warreneolsen/

Warren E. Olsen (Registration No. 27,290)
Attorney for Applicants

FITZPATRICK, CELLA, HARPER & SCINTO
Customer No. 05514
30 Rockefeller Plaza
New York, NY 10112-3800
Facsimile: (212) 218-2200